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AUTHOR Markoff, Annabelle M.
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ABSTRACT

The paper describes the development of the "Test of Thought and Language" (Total) which is intended to allow first grade teachers to determine if students are ready for phonics instruction or if, for some students, the curriculum should first develop language concepts, structures and thinking processes. Background information for the test's development includes an historical overview of reading instruction, and discussion of developmental issues, effectiveness of early intervention, the myth of static development, and dyslexics and reading instruction. Noted is the familiar pattern of students with high word reading scores, lower scores on oral reading tests, and much lower scores on silent reading tests suggesting the need for more emphasis on reading comprehension. The test is structured according to a matrix using the following perceptual parameters--auditory/receptive (listening), vocal motor/expressive (speaking), visual/receptive (reading), and visual motor/expressive (writing)--against linguistic parameters--semantic, syntactic, morphologic, and phonologic. A relationship between listening comprehension, verbal analogy skill and silent reading comprehension was observed. Specific subtests examined the following skills: listening comprehension, analogies, vocabulary, grammar, and word discrimination. Additional subtests for non-English speaking or language deficient children evaluate spontaneous drawing, copying, figural analogies, and visual arithmetic. (DB)

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Annabelle M. Markoff, Ph.D.
The Test of Thought and Language

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The Test of Thought and Language

Several decades have slipped by since the "phonics first" path was taken to improve reading performance in the United States. The statistics related to reading achievement are still dismal and alarming. It is estimated there are 30 million adult, functional illiterates (Stedman and Kaestle 1987). There is a 28-40 percent drop-out rate (Rapp 1986), where difficulty in reading provides a strong impetus to the leave taking. There are, also, 20 to 30 percent of our students who are having difficulty making progress through school (Will 1986). Again, many of this group, also, have difficulty with learning to read.

A specific study of reading achievement reported by Chall (1983) reveals that:

> "The results of the Follow Through children at fifth and sixth grades, when compared to local comparison groups, indicated consistently that decoding and spelling held up for fifth and sixth graders, but not word knowledge and reading comprehension on the Metropolitan Achievement" (Chall 1983).

These results speak for themselves in terms of the success of "phonics first" instruction. The lack of progress at the higher linguistic levels and the general literacy problem underscore the need to review our conceptualization of the necessary base for reading competence. Phonics instruction did not unlock word meaning or lead to comprehension, for some students. Perhaps this occurred because the thinking and language base was not adequately developed in some, and in others, as Chall suggests, because instruction was not provided intensively enough "in meaningful connected reading."

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Stedman and Kaestle (1987), in discussing causes of illiteracy, claim that "we have never done well in educating minorities and the poor, or in teaching higher order skill. We know that these groups have high reading failure and drop-out rates. Instruction, so singularly directed at the lower linguistic levels, may be an accessory to the existence of the oppressive illiteracy statistics.

It is to remedy this monolithic concentration of instruction that the Test of Thought and Language is being developed. The test will allow first grade teachers to determine if students are ready for phonics instruction or if, for some students, the curriculum may also need to develop language concepts, structures and thinking processes with equal fervor.

Historical Overview

The early sixties witnessed a massive shift in focus in reading instruction. With Flesh (1955) and Chall (1967) as articulate guides, the field went from what has been termed "a meaning based," "whole word" context focused approach, to a phonics, code emphasis approach. This time, phonics instruction was systematically organized around the basic spelling patterns and materials were provided in out of context formats. For those students whose oral language and thinking skills were adequate, this was, in many cases, a reasonable shift.

Even if the illiteracy statistics may be exaggerated, and even though there is a growing awareness that instruction cannot be directed to an either/or view on phonics or meaning, the content of reading readiness or preparation and beginning instruction is still, primarily, practice on the two lowest levels of linguistic functions. It involves the teaching of relationships between sounds and symbols and the structure and meaning

of words. The assumption has been that all that was needed was a means of "cracking the code" in order to improve reading performance for everyone.

The role of syntax and semantics, not to mention thinking procesess, were largely ignored as factors in reading success. Readiness observations have not differentiated the oral base for written language and reading has been taught as if it were a separate language process without antecedents.

In the early sixties, reading problems were viewed as based on perceptual deficits or dysfunctions. We now include language as a culprit, but the relationships are not clear. Language "as a tool of thought," to borrow Vygotsky's oft quoted phrase (1967), must be included in our conceptualization of the problem.

Developmental Issues

There are great differences in cognitive development. For those students whose thinking and language skills are not sufficient to support reading, our instructional priorities must respond to these differences. The problem for many urban, minority students is "underdevelopment not inability" (Comer 1987).

A "bottom to top" orientation, meaning attention to sound discrimination, spelling patterns, word concept and word structure issues, in regard to linguistic levels in instruction, is usually successful if the "top," including grammar and meaning is adequately developed in the student and given adequate experience and motivation. "Top," or the meaning level, also involves thinking and reasoning, and these are not observed explicitly in readiness tests. We cannot wait until third grade, after phonics skills are developed, to be concerned about these issues. The "top to bottom"

approach promoted in this test is not an issue of instructional method, or whether spelling pattern control determines the content of the reading material, or is taught separately. The issue at the outset of reading instruction concerns the sufficiency of the oral language and the thinking skills in the students, considered at all linguistic levels. It is this concept that redefines the approach to beginning reading instruction.

Early Intervention

Casto, et al (1986), in their review of the efficacy of early intervention programs, state that these programs produce a "positive sizeable effect." Many of these programs have focused on cognitive skills, perhaps not as clearly stated, as is being suggested as necessary, but these studies and the reading studies, provide a success base, to indicate efforts in this area may increase reading achievement.

Because reading, in most schools, is introduced in the first grade, that is the logical time to assess skill and begin individualized instruction.

Static Development

Perhaps the "phonics unlocks meaning" belief has persisted so tenaciously because it is assumed that thinking and language are adequately developed in most students as they enter school, or when inadequate, are viewed as innate, predetermined and immutable. This view is more prevalent in relation to thinking than to language, but both skills suffer in instruction, from the effects of this belief. These notions of sufficient or static, inadequate development in cognitive abilities, is pervasive in the educational community, in spite of endorsement of the theories of Piaget (1952) and Feuerstein (1980). Both of these men have advanced constructionist theories, meaning thinking ability is not simply, fully developed at birth, but evolves out of the

interactions with the environment, guided by adults. These theories have gained wide acceptance, theoretically. However, they have not been translated into educational practice on any systematic mass basis, except for the Head Start and Follow Through projects. These have been successful as the Casto review indicates. Yet, the belief in innate or predetermined and static ability continues to be voiced:

> Learning Disabled children are basically underachievers who require intense, perhaps supplemental instruction designed to overcome their academic deficits. This is not true for low achievers who are functioning near their ability (Wilson et al 1986).

These views are frequently expressed, even though earlier research has led Ysseldyke, et al (1982) to state that: "Learning Disability and low achieving students cannot be reliably differentiated on standardized tests."

Dyslexics and Reading Instruction

Lending support to the position being presented, Vellutino (1987), in a summary of research, surmises that the issues in reading difficulty may revolve around "subtle but complex, language deficiencies." Listed, as symptoms, are phonological coding deficits, deficient phonemic segmentation, poor vocabulary development and trouble discriminating grammatic and syntactic differences among words and sentences. Three of the four language levels are covered by this analysis. The area of semantics or meaning, which requires seeing relationships, is omitted, except for word meaning.

Dyslexics are differentiated from other students as only having difficulty with reading and writing. They have average I.Q. test scores and do relatively well in other curriculum areas. While the term is widely used to indicate these characteristics, as well as a student who doesn't learn to read with ordinary teaching or sometimes with special teaching,

"there are no clearly differentiated reading behaviors that can clearly distinguish dyslexic from other poor readers. . . . There are actually no diagnostic criteria that enable one to distinguish between constitutionally and experientially derived origins of reading disability" (Vellutino 1987).

We have students who have average intelligence as determined by current tests, which include undifferentiated thought and language skills, who don't learn to read, and students who don't have these skills who also don't learn to read. We now have suggestions that even for the seemingly adequate cognitive group, the problems may lie in the language and thinking area. This is a step up, in terms of historical perspective, taking us from our earlier view of the problem as a perceptual one, to now viewing the problem as a "subtle, complex" language one. We have another step to take, which is to place perceptual function within the language domain, and begin to link language skills to thinking skills in an organized, curriculum oriented frame of reference.

A Familiar Pattern

Anyone who has had experience in testing children is familiar with high word reading scores, lower scores on oral reading tests and much lower scores on silent reading tests. To some degree, this pattern may provide a measure of learning potential in reading. Matched to the instructional content, the amount of individualized instruction and the time, it may provide validation to the fact that the children are learning what they are taught. By inference, it may suggest that they would learn the content of another focus as well.

Phonics Yes!

There can be no argument over the importance of the systematic teaching of phonics. But even if instruction in word knowledge and comprehension

were to receive the same instructional attention and intensity that phonics has received, we wouldn't be home free. The direct teaching of reasoning, and the development of meaning through the analysis of syntax of the reading selection, still are not included in the category of comprehension instruction. Few materials exist, and teachers are not highly trained in leading group discussions, in questioning strategies, in analysis of reading content and structure or in knowledge about the pragmatics of the reading material used. There is limited interaction between teacher and student around the process-content-structure issues, in part because most of the time is consumed in instruction in the lower level skills.

Another serious problem lies in the lack of a clear conceptualization of how to link decoding skills to comprehension, which is the ultimate goal of reading, when the phonics skills are taught successfully and the students do possess the cognitive base to support comprehension.

Analyzing the Reading Process

Written language stands for oral language, which stands for experience. The problem of instruction will be simpler if teachers become aware of these relationships, and have some idea of how well the student has mastered the first symbol system. First grade classroom teachers can test and differentiate instruction when information about levels of language competence is provided and some measures of thinking skills are available.

Galagan (1985) presents the current situation regarding observation and attitudes succinctly:

> Evidence abounds that regular education teachers initiate referrals without documentation that alternative strategies have been attempted and evaluated. Moreover, there is often no evidence of the student's present level of intellectual functioning, language dominance, school attendance or systematic observational data on

> the student's performance. These omissions emanate from almost uniform attitudes that academic and behavioral difficulties are not related to inadequate instructional techniques, but rather home and family problems nd internal student deficits.

It is not common practice to assess cognitve skills, as is being suggested, upon school entry, and to initiate intensive instruction programs for those in need. If assessment in these areas does occur, it is provided, for the most part, after failure. When assessment does occur at school entry, information is not delivered to the teacher so that clear cut thought-oral language needs are explicitly determined.

The relationship between oral language and written language is not clear, in most teachers' minds, nor the instructional implications. Blame is not being placed on the shoulders of the classroom teacher, but rather on the assumptions which remain prevalent in education, in spite of questions regarding their veracity. The prevalent assumptions are that basic cognitive abilities are fixed; that specialists need to evaluate and instruct students who are not learning; that when students fail in reading, instruction needs to focus on phonics which will automatically lead to comprehension; and that the "basics" in education are the 3Rs or written language and arithmetic.

The assumptions underlying The Total are that thinking and language skills can be improved in students; that classroom teachers can evaluate and instruct students whose skills are not at "readiness" levels; that readiness testing must provide information about the receptive aspect of oral language, including thought; that first grade teachers are the logical teachers for this task; that more emphasis must be placed on thinking and language. They are "the basics" for all education, not just reading.

The Test of Thought and Language "The Total"

When work on this test was initiated, it was at the suggestion that there was a genuine need for a language test that could be used by regular classroom teachers and was group administered. The model developed grew out of years of experience in testing low achieving students and training teachers to teach reading to the "educationally handicapped." Basically, the first two sections of the tests sample receptive oral language skills. Figure I shows the matrix which was developed in order to place perceptual skill instruction within a language arts frame of reference and avoid the translation pitfalls in clinical testing.

Figure I

ANALYSIS OF LINGUISTIC AND MODAL PERFORMANCE

	ORAL LANGUAGE - 1ST ORDER REPRESENTATION		WRITTEN LANGUAGE - 2ND ORDER REPRESENTATION	
	AUDITORY (RECEPTIVE)	VOCAL (MOTOR) (EXPRESSIVE)	VISUAL (RECEPTIVE)	VISUAL MOTOR (EXPRESSIVE)
LINGUISTIC LEVEL	LISTENING	SPEAKING	READING	WRITING
SEMANTIC	THE TEST OF THOUGHT AND LANGUAGE			
SYNTACTIC				
MORPHOLOGIC				
PHONOLOGIC				

From, The Learning Instructional Skills Inventory, Annabelle M. Markoff, PH.D. 1978, Consulting Psychologist Press, Palo Alto, California (unpublished)

Repeatedly, with the use of this matrix to organize diagnostic information, a relationship between grade level achievement in listening comprehension,

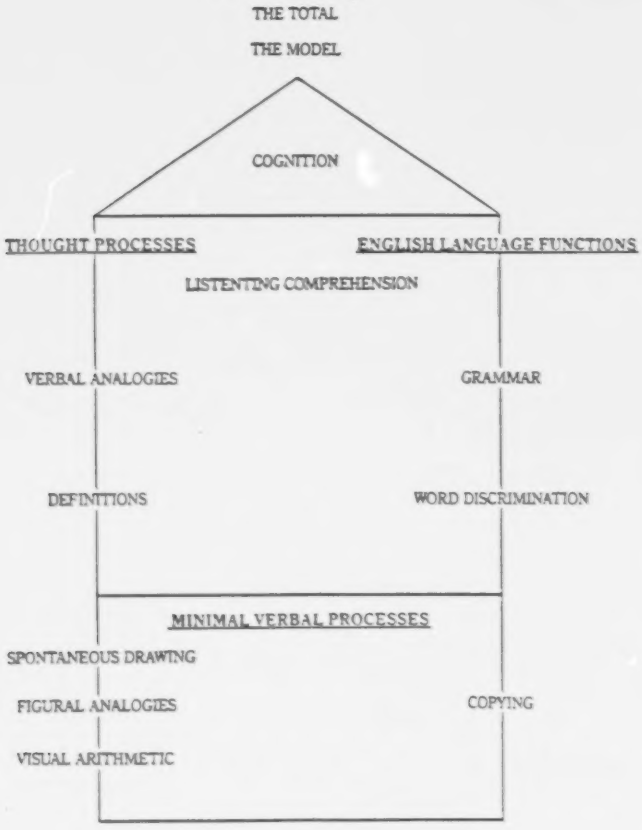
verbal analogy skill and silent reading comprehension began to emerge. The first two were often predictive of the latter. It was an interest in this pattern of general language skill and reasoning that provided the basis for the distinctions made in the test, between the meaningful and structural aspects of language (Markoff 1972, 1976a, 1976b, 1978).

Listening comprehension, based on graded paragraphs, provides information about general linguistic competence. The paragraphs include information about the amount of language, the number and complexity of concepts or vocabulary, the length and complexity of sentences and the complexity of the internal structure of the paragraph itself, that the student can process. A verbal analogy test can deliver information about the ability to see sets of relationships between concepts. It is a complex sample of vocabulary skill that involves reasoning. Silent reading usually did not exceed the level of achievement in these two areas, although it often failed to reach either level.

The thinking and language subtests of The Total are built entirely on the listening column. Receptive linguistic skills at all levels are explored. Those that involve more complex thinking are separated into the subtest called the Test Of Thought ("TOT"). The language issues more closely related to the structural functions of language are grouped into the subtest called English Language Functions ("ELF"). The last group of tests is designed for those students who do not speak English or are language deficient or delayed. This test allows for an observation of a group of thought processes, without the use of language in administration, and minimally, in content. It can be used as an additional source of information about thought processes in those who understand English. When it is given to

students without English competence, it utilizes imitation and modeling procedures for administration, and thus is called the "IMP."

FIGURE II



The format of the test is a pictorial, multiple choice one, which does not require expressive oral language and the test is group administered.

Section I. The Test of Thought and Language "The TOT"

Four subtests are included in this section of the Total:

TEST I LISTENING COMPREHENSION - Dogs as the content of this test was chosen so as to be in the experience of all children. The test begins with simple sentences and limited amount. In succeeding paragraphs, amount, complexity of structure and concepts are increased.

TEST II ANALOGIES - Here, perceiving sets of relationships between concepts is observed. Analogies also involve being able to discern the similarity or resemblance of concepts by their attributes, circumstances or effects. It demands the use of abstraction and inference. As a single test, it provides a great deal of information about the use of complex thinking and language.

TEST III VOCABULARY - This skill has long been considered positively correlated with school success. As a single variable, it has been used to indicate level of linguistic competence. A concept is a thought, an idea or an image. In a sense, concepts are the building blocks of thought and language.

These three tests stand as the observation of the more complex thinking processes. The Listening Comprehension Test is only to be administered once, but the results are to be considered as bridging thought and language. This test is the most global measure of understanding, so it is included at the semantic level, when considering skill in the English lanauge structure or function section as well.

Section II English Language Functions - "The Elf"

In the three subtests of this section, the structural aspect of language is being observed.

TEST I LISTENING COMPREHENSION - Already administered in the "TOT," only the results need be considered with this section. If the "TOT" is not administered and the "ELF" is used separately, then the Listening Comprehension test would be included in the administration of this test.

TEST II GRAMMAR - The elements of syntax included in this test are tense, plurals, negatives, passives and sentence complexity. Sentence complexity includes issues related to compounding and the use of dependent clauses and their order. Reading texts frequently use structures not in the language repertoire of the students, making comprehension difficult. Sampling this skill gives the teacher information not usually explicitly observed. The last examples in this test observe the ability to hear the number of words in a sentence.

TEST III WORD DISCRIMINATION The aspect of morphology being observed is the awareness of the segmented nature of words. The number of syllables in a word, the position of a sound in a word and alliteration and rhyming are all tested. In this test, information is also being gathered on the child's ability to differentiate between sounds in words, their number and position and their analogous relationships. These and the skills observed in WORD STRUCTURE test the child's knowledge that language involves sounds which occur in sequence and follow rules and require analogic thought.

These five subtests complete the observation of thinking and language skills in students whose language skills are deemed adequate.

Section III. Minimal Verbal Processes - "The IMP"

For those students identified as non-English speaking, or language deficient or delayed, the third section of the tests has been provided. This section allows the teacher to observe the function of some higher level skills, even though the students are not proficient in English.

The acronym was selected because the test is constructed to use minimal language in content or administration. It can be used with imitation and modeling procedures as the means of giving instructions to the students. It also contains four subtests and can be used to gain additional information about the thinking skills of students who speak English.

TEST I SPONTANEOUS DRAWING - In this test the student is directed to draw a picture of him/herself. The number of concepts included in the drawing are counted. The test is analogous to a vocabulary test in that it notes the number of ideas the child expresses.

TEST II COPYING - A sentence is copied, to provide information about visual motor skill. Language is used as content of a perceptual assessment related to writing and form perception. It is not the language content that is being assessed, but the perceptual skills related to form, space, sequence and orientation. This is a more direct, and curriculum related manner of assessing this skill, than assessment with geometric forms.

TEST III FIGURAL ANALOGIES - Just as in the Test of Thought, the student's skill in seeing relationships between sets of concepts is being observed. The thought process itself is observed in students where language is not developed or proficient.

TEST IV VISUAL ARITHMETIC - The ability to count, to add, to subtract, as well as knowledge of frequently used fractions and sampling of skills to third grade level are tested. The basic arithmetic processes all involve thinking skills and

provide another minimal language medium for observation of cognitive performance.

The Total has been constructed to provide information about thinking and language and to sensitize teachers to these issues as the basic skills necessary for school success. The test is based on the belief that both skills can be taught and children with limited proficiency can improve their performance in reading and have a better chance to master the content of the school curriculum.

Curriculum Implications

This area will be covered more completely in the test manual. However, a brief statement of the principles deemed to be advantageous in the development of cognitive skills is based on both a constructionist and a dialectical approach. A constructionist approach rests on the belief that environmental factors influence the development of cognitive structure. A dialectical approach involves the concept of a unity of opposites. In this case, this would be exemplified by the use of both "top to bottom" and "bottom to top" instructional thrusts, and by a balance between discrete skill and process emphasis in instruction. The implications of the use of these two principles would influence all curriculum, not only reading instruction, and would include:

1. Direct experience with the concepts being taught, wherever possible. For low achieving students, manipulation of the objects of instruction and experiences with the concepts being taught is still essential as they enter formal education. Too much early teaching is presented at a paper and pencil level, when the concepts of the lesson are not rooted in students' experiences.

2. Increased adult-child interactions, where the adults are knowledgeable about selecting pacing, varying, modifying, evaluating and reinforcing behaviors.

3. Intense teacher training in questioning strategies and unit planning. Just a shift in the types of questions the teacher poses, away from factual questions as the predominant mode, to a mode which requires relational thought, would be of assistance in improving thinking skills. Thinking through the concepts to be taught, putting them in sequence, planning the activities in advance and including student planning, evaluation and replanning would also contribute greatly to the goal of improved cognitive performance. Unit planning, where direct consideration occurs about the level of thought processes, as well as the activities, is an essential ingredient in improving thinking skills.

4. Planned experiences in formal and informal language interactions between the students will facilitate language development. Group discussions, led by both teachers and students who have been trained in a few basic principles, will insure that all think and share information.

5. Increased time spent in social studies and science and the arts, where direct experience, active learning and problem solving are essential and fostered, and where opportunities for generalization of discrete skill teaching is provided.

6. "Lap Teaching" (Nixon, 1963) for students whose cognitive skills are seriously depressed. "Lap Teaching" involves going back to earlier forms of parent-like teaching, involving closer physical proximity in the teaching-learning relationship, more adult involvement in monitoring the learning performance to insure positive outcomes as far as learning is concerned.

7. Just the shift in viewing "basics" as thought and language rather than the 3Rs will make a vast difference in early instruction in schools and is likely to improve achievements and reading performance. Reading is a thinking process using language, and evaluation and instruction need to reflect this conception.

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